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IS 15073-2 (2008): Packaging of electric detonator, Part 2: Corrugated fibreboard cases [CHD 26: Explosives and Pyrotechnics]

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विद्युत डेटोनेटरों की पैकिंग

भाग 2 नालीदार फाइबरबोर्ड केस

Indian Standard

PACKAGING OF ELECTRIC DETONATOR

PART 2 CORRUGATED FIBREBOARD CASES

ICS 55.160; 71.100.30, 79.040

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

October 2008 **Price Group 3**

Explosives and Pyrotechnics Sectional Committee, CHD 26

FOREWORD

This Indian Standard (Part 2) was adopted by the Bureau of Indian Standards, after the draft finalized by the Explosives and Pyrotechnics Sectional Committee had been approved by the Chemical Division Council.

Packing of electric detonators can be done in different types of packaging like wooden case, corrugated fibreboard boxes, etc. They are covered under dangerous goods and involve risk in handling. The Committee responsible for formulation of standards on explosives felt it necessary to have specifications for their packaging also. Therefore, specifications for packaging of electric and non-electric detonators are being formulated. Initially, IS 10212 (Part 1): 1986 'General requirements for packages of explosives: Part 1 Commercial high explosives' was formulated.

The other part in the series is:

Part 1 Wooden cases

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

PACKAGING OF ELECTRIC DETONATOR

PART 2 CORRUGATED FIBREBOARD CASES

1 SCOPE

This standard (Part 2) prescribes the requirements of corrugated fibreboard packages for electric detonators meant for commercial use.

2 REFERENCES

The standards listed below contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below :

IS No.	*Title*
1060 (Part 1) : 1966	Methods of sampling and test for paper and allied products, Part 1 *(revised)*
1260 (Part 1) : 1973	Pictorial marking for handling and labelling of goods : Part 1 Dangerous goods *(first revision)*
1446 : 2002	Classification of dangerous goods *(second revision)*
4006 (Part 1) : 1985	Methods of test for paper and pulp based packaging materials, Part 1 *(first revision)*
6481 : 1971	Guide for principal uses and styles of fibreboard containers
7028	Performance tests for complete, filled transport packages:
(Part 1) : 2002	Stacking tests using static load *(second revision)*
(Part 3) : 2002	Horizontal impact test (horizontal or inclined tests, pendulum test) *(second revision)*
(Part 4) : 1987	Vertical impact drop test *(first revision)*
(Part 8) : 2002	Water spray test *(second revision)*
10081 : 1981	Glossary of terms relating to commercial explosives, pyrotechnics and blasting practices

3 TERMINOLOGY

For the purpose of this standard, definitions as given in IS 1446 and IS 10081 shall apply.

4 PACKAGE

4.1 Inner Package

The inner packaging of the contents shall be in accordance with the requirements laid down by the Chief Controller of Explosives, Nagpur.

4.2 Outer Package

The outer packaging for the electric detonators shall meet the requirements as specified under **4.3**, **4.4** and Table 1.

4.3 Material and Construction

4.3.1 The packages shall be manufactured from suitable kraft liner or paper board or any combination thereof.

4.3.2 *Construction*

Construction shall be fixed on the basis of requirements and approval of Chief Controller of Explosives, Nagpur.

4.3.3 The edge board is made of polyolefinic and cellulosic fibres and has the requisite dimensions.

4.4 Performance Requirement

The package shall withstand the tests and conditions thereof as given in Table 2.

5 MARKING

5.1 The package shall be marked to indicate the following:

a) *Statutory Marking* — Marking as required and approved by the statutory Authority

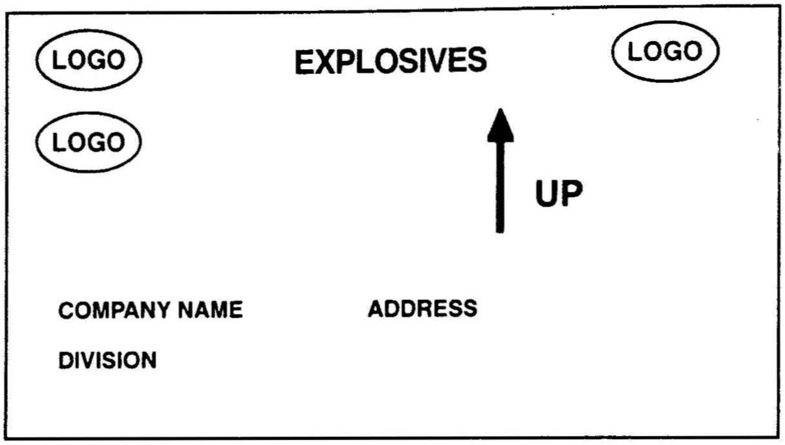
b) *Label Size* — The details of label sizes are given in Annex A. The size of the label shall be 10 cm^2 (*see* Fig. 1).

NOTE — The size of the lable specified should be commensurate to the size of the box, in case the specifications vary.

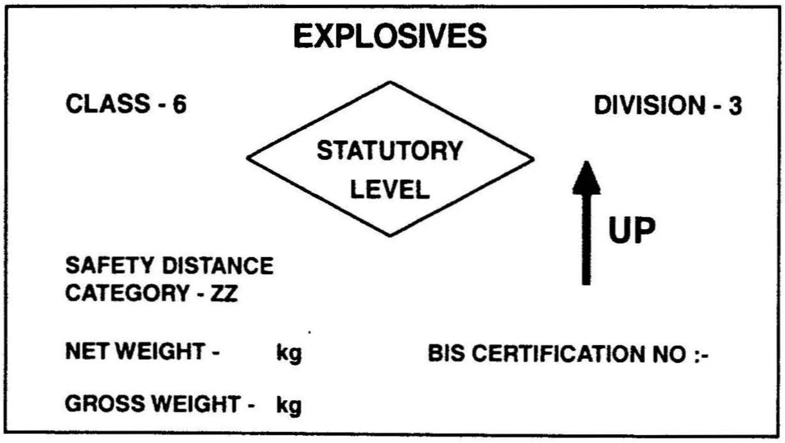
5.2 BIS Certification Marking

The fibreboard cases may also be marked with Standard Mark.

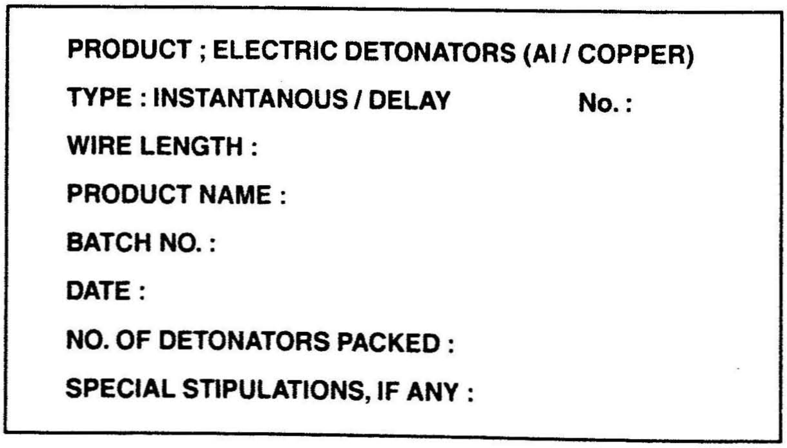
5.2.1 The material may also be marked with the Standard Mark. The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.



1A Front Side



1B Back Side


PRODUCT ; ELECTRIC DETONATORS (Al / COPPER)
TYPE : INSTANTANOUS / DELAY
No. :
WIRE LENGTH :
PRODUCT NAME :
BATCH NO. :
DATE :
NO. OF DETONATORS PACKED :
SPECIAL STIPULATIONS, IF ANY :

1C End Side

FIG. 1 LABELLING ON DIFFERENT SIDES

Table 1 Requirements for Corrugated Fibreboard Packages

(*Clauses* 4.2 *and* 6.3.1)

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test Ref to Cl of IS (4)
i)	Shape and size	Any style as approved by the Chief Controller of Explosives (*see* IS 6481 for guidance)	—
ii)	Substance, g/m^2	5 ply construction with inner layers of suitable GSM papers and 2 flutes medium	**6** of IS 1060 (Part 1)
iii)	Combined internal dimension (L + W + D), mm, *Max*	Length = 535 mm Width = 355 mm Height = 300 mm, *Max* Total = 1 190 mm	—
iv)	Bursting strength, kgf/cm^2, *Min*	18	**12.5** of IS 1060 (Part 1)
v)	Water absorption for 30 min, g/m^2, *Max* (Cobb test)	125	**6** of IS 4006 (Part 1) and **13.2.2** of IS 1060 (Part 1)

Table 2 Performance Tests and Conditions

(*Clause* 4.4)

Sl No. (1)	Test (2)	Hazards to be Simulated (3)	Test Conditions (4)	Criteria for Acceptance (5)	Ref to IS (6)
i)	Drop test	Drop by mishandling	Drop height – 1.5 m, No. of drops — 4 (Test to be carried out after loading the box uniformly with 20 kg of load. Sequence of drops shall be top and bottom faces followed by two diagonally opposite corners)	No rupture of package	7028 (Part 4)
ii)	Inclined impact test	Collision of packages	Runway distance — 1 200 to 1 400 cm	The package shall not be permanently deshaped or damaged	7028 (Part 3)
iii)	Stacking test	Compression in transit and in warehouses	Load bearing capacity, 125 kg	The edges of the packages shall not show deflection more than 12 mm at the maximum load	7028 (Part 1)

6 SAMPLING, CONDITIONING AND TESTING OF CORRUGATED FIBREBOARD PACKAGES

6.1 The packages shall be sampled and tested within 20 days of their receipt by the purchaser. From each consignment of 10 000 packages or part thereof, adequate number of packages shall be selected for testing according to **6.3**.

6.1.1 If the packages are bundled, the number of bundles to be selected at random shall be equal to the number of packages required and from each bundle so selected one package shall be selected at random for testing.

6.1.2 If the packages are not bundled, the packages shall be selected at random from the total consignment.

6.2 Conditioning

The sample of packages so selected shall be deemed to represent the whole consignment of packages and shall be conditioned before testing by the method prescribed in **5** of IS 1060 (Part 1).

6.3 Testing

6.3.1 All the samples as selected under **6.1** shall be tested for dimensional requirement as per Table 1 and clause **4.4**.

6.3.2 The type of tests, selection of packages for testing and method of testing shall be as given in Table 3.

6.4 Acceptance and Retesting

6.4.1 *Acceptance*

The consignment of packages shall be deemed to comply with the test requirements of this specification, if the specified number of packages from the test sample as given in Table 3 have been tested as required in relevant clauses and all the packages pass the tests.

6.4.2 *Retesting*

If only one package fails to pass one or more tests, retesting shall be done on double the number of packages given under col 3 of Table 3 for that particular test for which the package failed. If no further package fails in the retest the consignment shall be accepted as passing.

Table 3 Testing of Packages
(*Clauses* 6.3.2, 6.4.1 *and* 6.4.2)

Sl No.	Requirement	No. of Packages to be Selected	Acceptance Level
(1)	(2)	(3)	(4)
i)	Shape and size	50	5
ii)	Combined internal dimension (L + W + D), mm, *Max*	50	5
iii)	Bursting strength	5	0
iv)	Water absorption for 30 min (Cobb test)[1]	5	0
v)	Drop test	5	0
vi)	Inclined impact test	5	0
vii)	Stacking test	5	0

[1] See Cobb test as given in 13.2.2 of IS 1060 (Part 1).

ANNEX A

[*Clause* 5.1(b)]

LABEL SIZES

A-1 FRONT SIDE

Sl No.	*Title*	*Font Name*	*Font Size*
i)	Explosives	Arial	72 (18 mm)
ii)	Logo	As per manufacturer	
iii)	Company name	Arial	48 (12 mm)
iv)	Division	Arial	48 (12 mm)
v)	UP	Arial	36 (9 mm)
vi)	Address	Arial	36 (9 mm)
vii)	Arrow		Height 7 cm × Width 3.5 cm

A-2 BACK SIDE

Sl No.	*Title*	*Font Name*	*Font Size*
i)	Explosive	Arial	72 (18 mm)
ii)	Statutory marking	Arial	36 (9 mm)
iii)	Class-6	Arial	36 (9 mm)
iv)	Division-3	Arial	36 (9 mm)
v)	Safety Distance Category — ZZ	Arial	36 (9 mm)
vi)	UP	Arial	36 (9 mm)
vii)	Arrow	—	Height 7 cm × Width 3.5 cm
viii)	Net Weight	Arial	36 (9 mm)
ix)	Gross Weight	Arial	36 (9 mm)
x)	Kilograms	Arial	28 (7 mm)
xi)	BIS Specification No.	Arial	36 (9 mm)

A-3 ENDS

Title	*Font Name*	*Font Size*
All letters	Arial	28 (7 mm)

NOTE — These are the prescribed sizes recommended for use on boxes of specified dimensions. In case the dimension of the box varies, the label sizes may be suitably modified so as to be legible and clear and commensurate to the size of the box.

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Explosives and Pyrotechnics Sectional Committee, CHD 26

Organization	*Representative(s)*
Department of Explosives, Nagpur	Shri M. Anbunathan (***Chairman***) Shri K. N. Ghosh (*Alternate*)
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Central Mine Planning & Design Institute Ltd, Ranchi	Representative Shri J. S. Arjani (*Alternate*)
Central Mining Research Institute, Dhanbad	Shri R. R. Singh Shri S. K. Roy (*Alternate*)
Consumer Guidance Society of India, Mumbai	Shri N. G. Wagle Smt Renu Talwani (*Alternate*)
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High Energy Material Research Laboratory, Pune	Dr (Mr) Somayajulu Shri P. R. Arya (*Alternate*)
Indian Explosives Ltd, Kolkata	Dr V. V. Ramana Rao Dr R. Sunderarajan (*Alternate*)
Indian Institute of Packaging, Mumbai	Shri A. A. Joshi Shri Manik Kohli (*Alternate*)
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National Mineral Development Corporation Ltd, Dist Bellary	Shri C. Sounder Rajan Shri A. K. Gupta (*Alternate*)
The All India Chamber of Match Industries, Sivakasi	President Secretary (*Alternate*)
The Coronation Fire Works Factory, Sivakasi	Shri P. Kanagavel Shri K. Jayakumar (*Alternate*)
The Metal Powder Company Ltd, Thirumangalam	Shri Gunasingh Chelladurai Shri K. Kesavan (*Alternate*)
The Tamil Nadu Fireworks and Amorces Manufacturers Association, Sivakasi	President Secretary (*Alternate*)
WIMCO Limited, Ambernath	Shri J. Vaidyanathan
BIS Directorate General	Shri E. Devender, Scientist F & Head (CHD) Representing Director General (*Ex-officio*)

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This Indian Standard has been developed from Doc : No. CHD 26 (945).

Amendments Issued Since Publication

Amendment No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402
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Telegrams : Manaksanstha
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Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002
2323 7617
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Eastern : 1/14, C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi
KOLKATA 700054
2337 8499, 2337 8561
2337 8626, 2337 9120

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022
260 3843
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Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113
2254 1216, 2254 1442
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Printed at Government of India Press, Faridabad